SUBSTITUTE SHEET

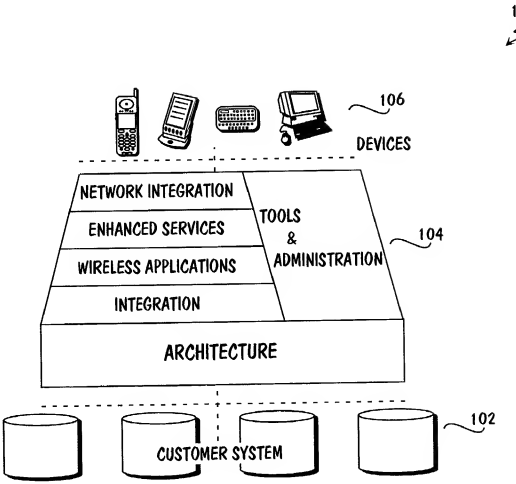


FIG. 1

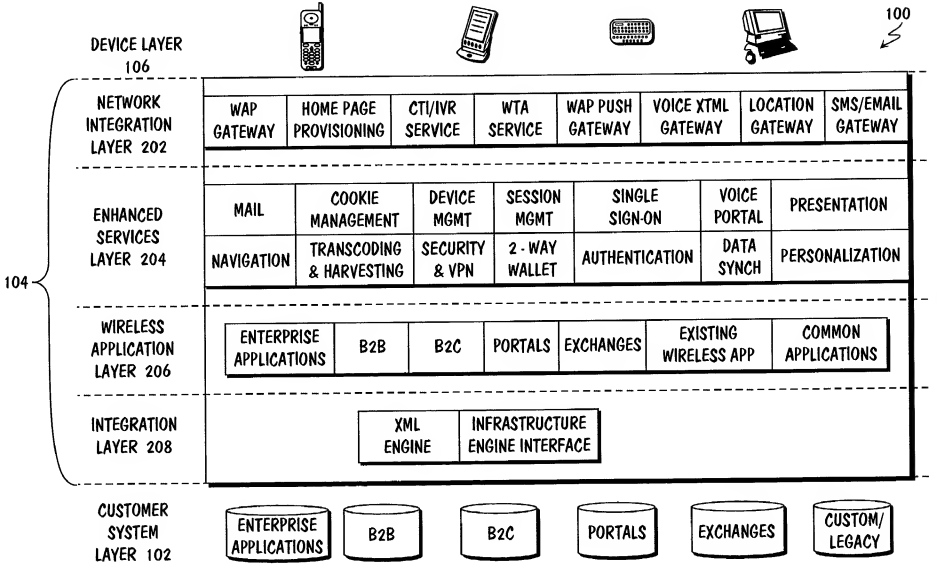

100
DEVICE LAYER 106
NETWORK INTEGRATION LAYER 202
WAP GATEWAY
HOME PAGE PROVISIONING
CTI/IVR SERVICE
WTA SERVICE
WAP PUSH GATEWAY
VOICE XTML GATEWAY
LOCATION GATEWAY
SMS/EMAIL GATEWAY
ENHANCED SERVICES LAYER 204
MAIL
COOKIE MANAGEMENT
DEVICE MGMT
SESSION MGMT
SINGLE SIGN-ON
VOICE PORTAL
PRESENTATION
NAVIGATION
TRANSCODING & HARVESTING
SECURITY & VPN
2-WAY WALLET
AUTHENTICATION
DATA SYNCH
PERSONALIZATION
104
WIRELESS APPLICATION LAYER 206
ENTERPRISE APPLICATIONS
B2B
B2C
PORTALS
EXCHANGES
EXISTING WIRELESS APP
COMMON APPLICATIONS
INTEGRATION LAYER 208
XML ENGINE
INFRASTRUCTURE ENGINE INTERFACE
CUSTOMER SYSTEM LAYER 102
ENTERPRISE APPLICATIONS
B2B
B2C
PORTALS
EXCHANGES
CUSTOM/ LEGACY

FIG. 2

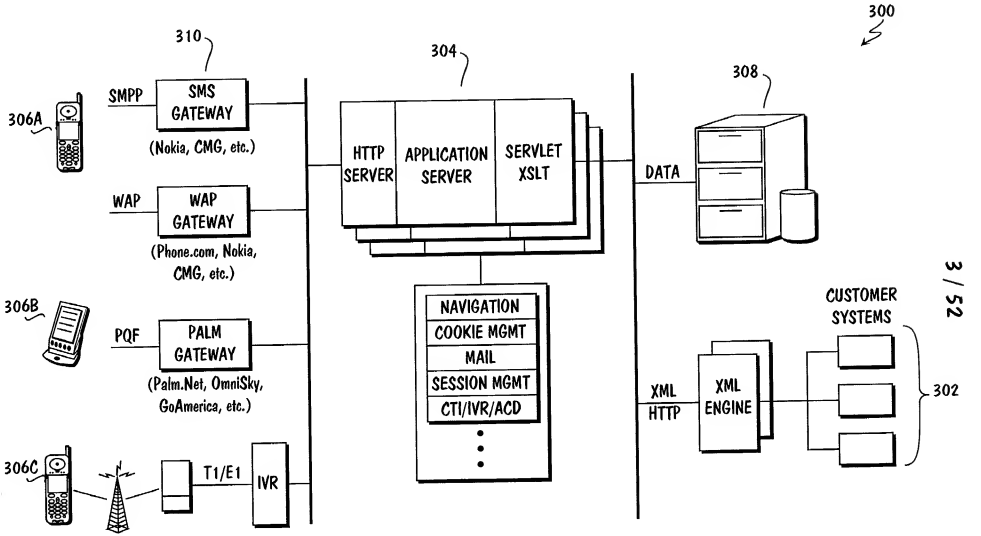

300
310
304
308
306A
SMPP
SMS GATEWAY
(Nokia, CMG, etc.)
HTTP SERVER
APPLICATION SERVER
SERVLET XSLT
DATA
WAP
WAP GATEWAY
(Phone.com, Nokia, CMG, etc.)
306B
PQF
PALM GATEWAY
(Palm.Net, OmniSky, GoAmerica, etc.)
NAVIGATION
COOKIE MGMT
MAIL
SESSION MGMT
CTI/IVR/ACD
CUSTOMER SYSTEMS
XML HTTP
XML ENGINE
302
306C
T1/E1
IVR

FIG. 3

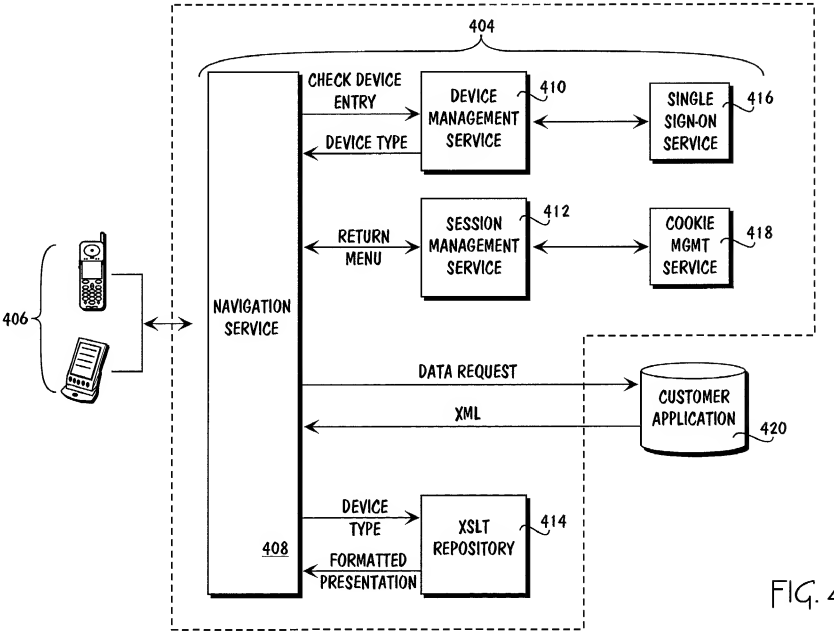

404
CHECK DEVICE ENTRY
DEVICE TYPE
DEVICE MANAGEMENT SERVICE
410
SINGLE SIGN-ON SERVICE
416
RETURN MENU
SESSION MANAGEMENT SERVICE
412
COOKIE MGMT SERVICE
418
406
NAVIGATION SERVICE
DATA REQUEST
XML
CUSTOMER APPLICATION
420
DEVICE TYPE
FORMATTED PRESENTATION
408
XSLT REPOSITORY
414

FIG. 4

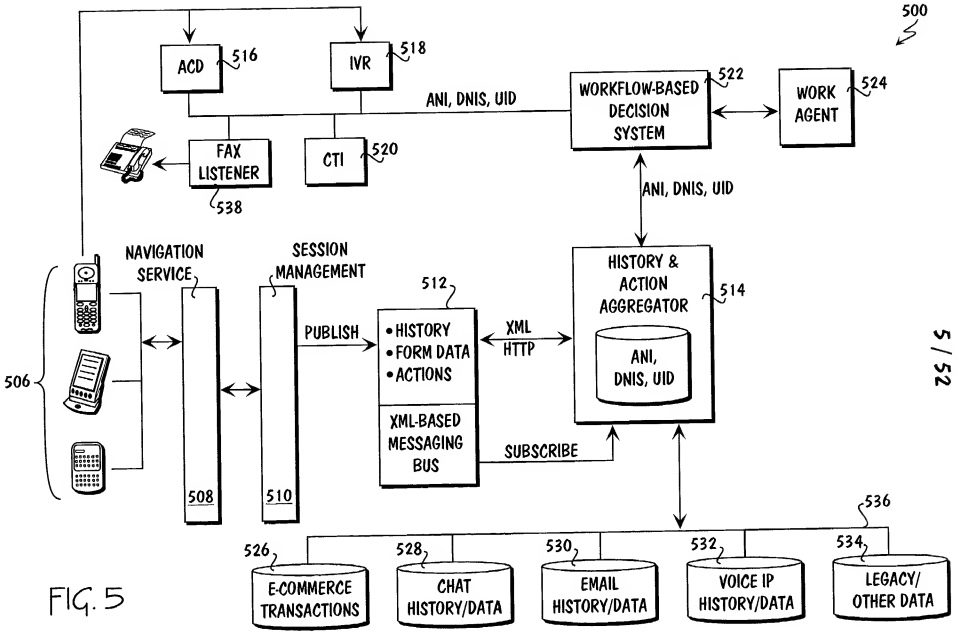

500
ACD
516
IVR
518
ANI, DNIS, UID
WORKFLOW-BASED DECISION SYSTEM
522
WORK AGENT
524
FAX LISTENER
538
CTI
520
ANI, DNIS, UID
NAVIGATION SERVICE
SESSION MANAGEMENT
HISTORY & ACTION AGGREGATOR
514
512
PUBLISH
• HISTORY
• FORM DATA
• ACTIONS
XML HTTP
ANI, DNIS, UID
506
508
510
XML-BASED MESSAGING BUS
SUBSCRIBE
536
526
E-COMMERCE TRANSACTIONS
528
CHAT HISTORY/DATA
530
EMAIL HISTORY/DATA
532
VOICE IP HISTORY/DATA
534
LEGACY/ OTHER DATA

FIG. 5

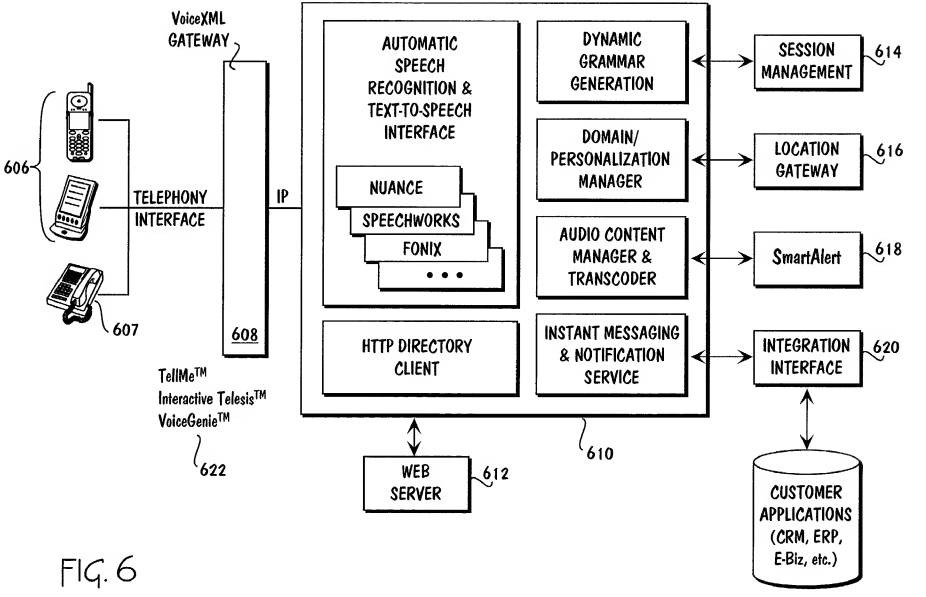

VoiceXML
GATEWAY
606
TELEPHONY
INTERFACE
607
IP
608
TellMe™
Interactive Telesis™
VoiceGenie™
622
AUTOMATIC
SPEECH
RECOGNITION &
TEXT-TO-SPEECH
INTERFACE
NUANCE
SPEECHWORKS
FONIX
HTTP DIRECTORY
CLIENT
DYNAMIC
GRAMMAR
GENERATION
DOMAIN/
PERSONALIZATION
MANAGER
AUDIO CONTENT
MANAGER &
TRANSCODER
INSTANT MESSAGING
& NOTIFICATION
SERVICE
610
WEB
SERVER
612
SESSION
MANAGEMENT
614
LOCATION
GATEWAY
616
SmartAlert
618
INTEGRATION
INTERFACE
620
CUSTOMER
APPLICATIONS
(CRM, ERP,
E-Biz, etc.)

FIG. 6

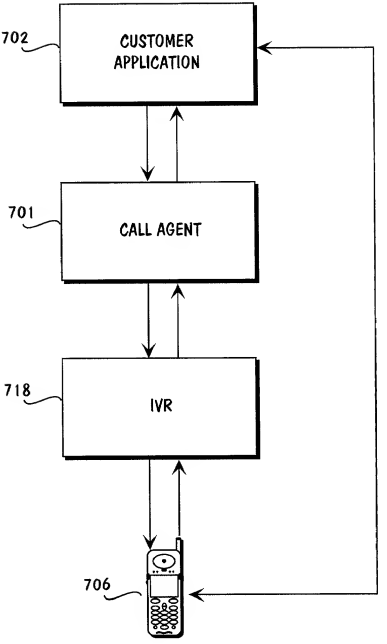


FIG. 7

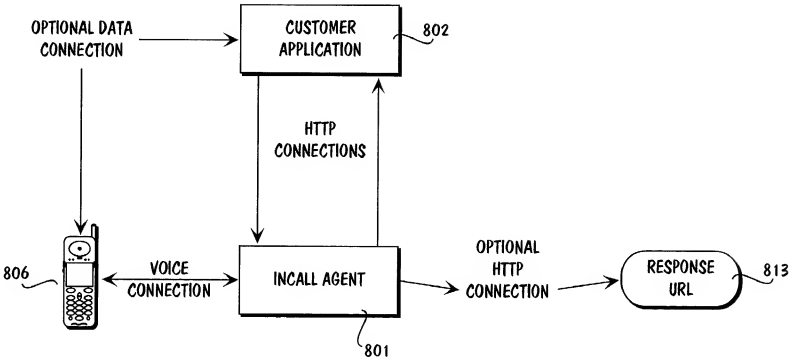

OPTIONAL DATA CONNECTION
CUSTOMER APPLICATION
802
HTTP CONNECTIONS
806
VOICE CONNECTION
INCALL AGENT
801
OPTIONAL HTTP CONNECTION
RESPONSE URL
813

FIG. 8A

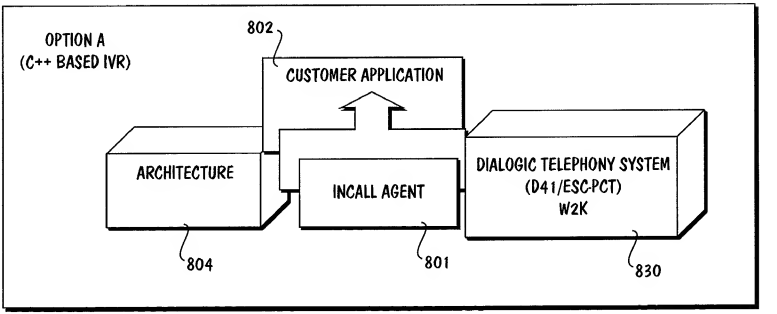

OPTION A
(C++ BASED IVR)
802
CUSTOMER APPLICATION
ARCHITECTURE
INCALL AGENT
DIALOGIC TELEPHONY SYSTEM
(D41/ESC-PCT)
W2K
804
801
830

FIG. 8B

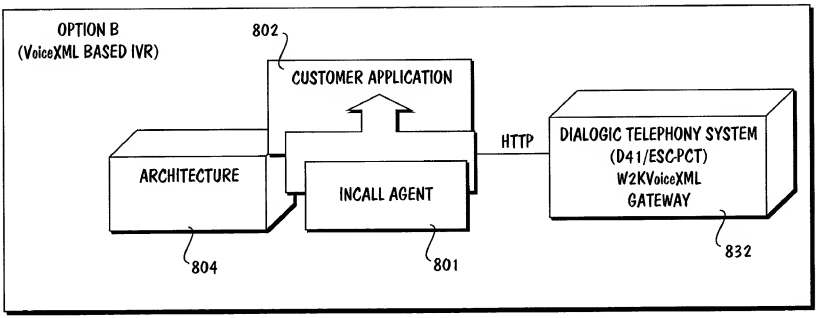

OPTION B
(VoiceXML BASED IVR)
802
CUSTOMER APPLICATION
ARCHITECTURE
INCALL AGENT
HTTP
DIALOGIC TELEPHONY SYSTEM
(D41/ESC-PCT)
W2KVoiceXML
GATEWAY
804
801
832

FIG. 8C

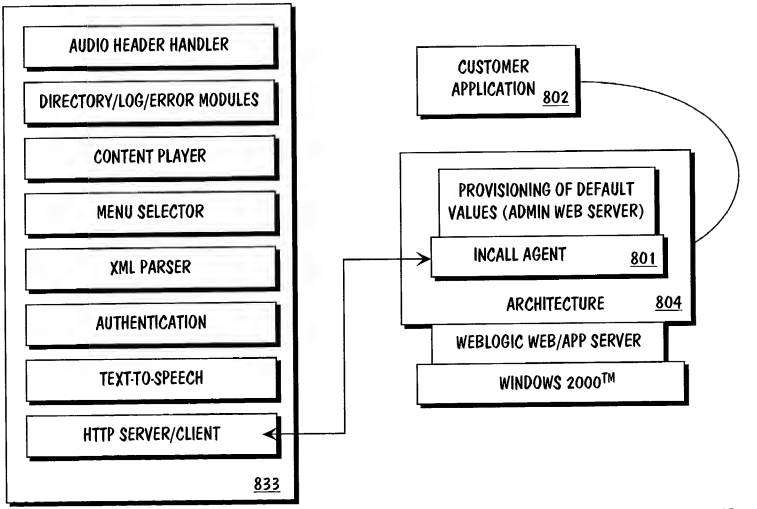

AUDIO HEADER HANDLER
DIRECTORY/LOG/ERROR MODULES
CONTENT PLAYER
MENU SELECTOR
XML PARSER
AUTHENTICATION
TEXT-TO-SPEECH
HTTP SERVER/CLIENT
833
CUSTOMER APPLICATION 802
PROVISIONING OF DEFAULT VALUES (ADMIN WEB SERVER)
INCALL AGENT 801
ARCHITECTURE 804
WEBLOGIC WEB/APP SERVER
WINDOWS 2000™

FIG. 8D

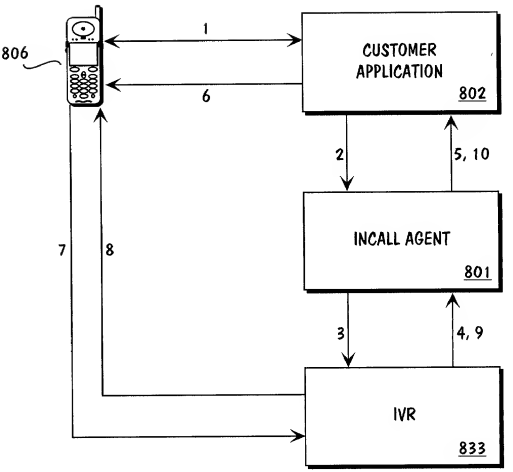

806
1
6
CUSTOMER APPLICATION
802
2
5, 10
INCALL AGENT
801
7
8
3
4, 9
IVR
833

FIG. 8E

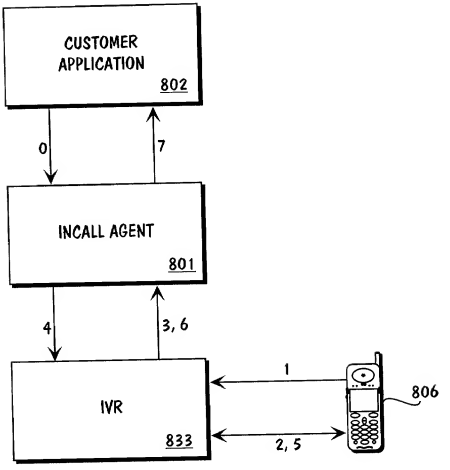

CUSTOMER APPLICATION
802
0
7
INCALL AGENT
801
4
3, 6
IVR
833
1
2, 5
806

FIG. 8F

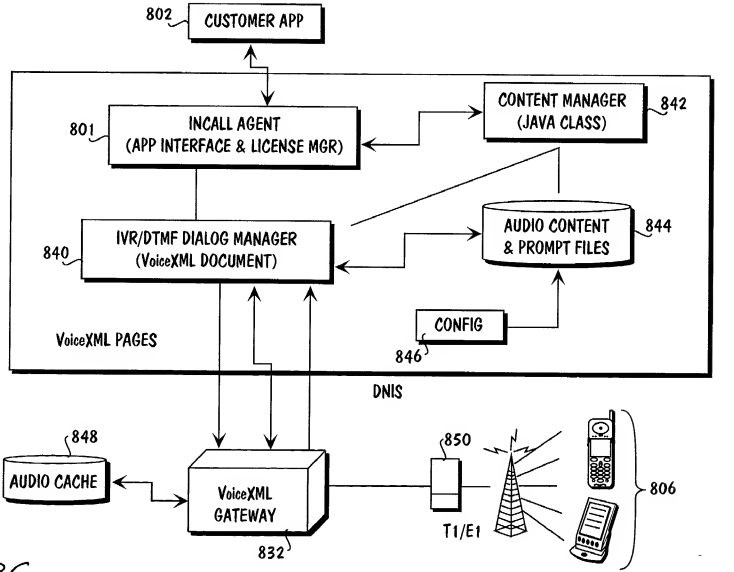

802
CUSTOMER APP
801
INCALL AGENT
(APP INTERFACE & LICENSE MGR)
CONTENT MANAGER
(JAVA CLASS)
842
840
IVR/DTMF DIALOG MANAGER
(VoiceXML DOCUMENT)
AUDIO CONTENT
& PROMPT FILES
844
VoiceXML PAGES
CONFIG
846
DNIS
848
AUDIO CACHE
VoiceXML
GATEWAY
832
850
T1/E1
806

FIG. 8G

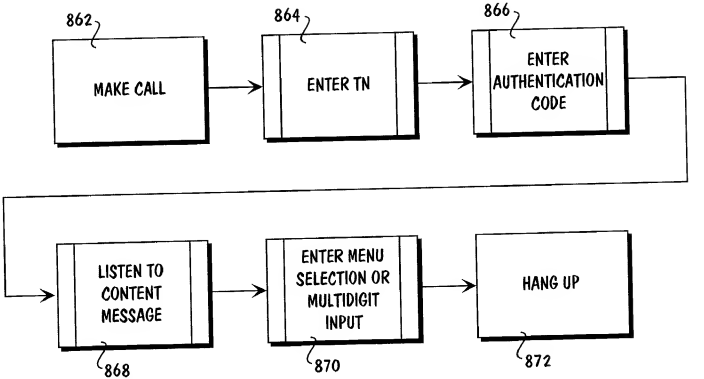

862
MAKE CALL
864
ENTER TN
866
ENTER AUTHENTICATION CODE
LISTEN TO CONTENT MESSAGE
868
ENTER MENU SELECTION OR MULTIDIGIT INPUT
870
HANG UP
872

FIG. 8H

Element:	Incall Service
Attributes:	title
Children:	Service
Description:	A container. A high level tag that marks the start and end of the XML file. Required.
Element:	Service
Attributes:	name
Parents:	Incall Service
Children:	DNIS | Service_description | Multicall | Percall | Reset
Description:	A container. The parameters in this container describe a service running on a particular phone line (DNIS). Each line running Incall Service must have a service described for that line. Required.
Element:	DNIS
Parents:	Service
Description:	The number the caller dialed to reach the application. Required.
Element:	Service_description
Parents:	Service
Description:	Audio. The description of the service. This audio is played to reassure the caller that they have dialed the right number. Fits the carrier phrase, "Hello. You have reached <System_description>." Required.
Element:	Multicall
Parents:	Service
Children:	Call_info | Authentication | Content | Choices Value_entry
Description:	A container. The parameters specified in Multicall are to be used as default values for all the calls for the service specified in Service. Any tag may be specified in Multicall. Parameters set here act as default values for all calls for that service until another Multicall file for that service is specified. Optional.
Element:	Percall
Parents:	Service
Children:	Call
Description:	A container. Contains the list of calls to be made, one call per Call tag. Required if no Multicall tag specified.
Element:	Call
Attributes:	id
Parents:	Percall
Children:	Call_info | Authentication | Content | Choices | Value_entry | Reset
Description:	A container. Contains information for a specific call. Required if there is a Percall tag.

FIG. 9A

Element:	Reset
Parents:	Service | Call
Description:	Resets/Cancels a particular call (if used as a child for Call) or all potential call for a particular service (if used as a child for Service). Optional.
Element:	Call_info
Parents:	Multicall | Call
Children:	Phone_number | Response_url
Description:	A container. Contains information about the call, beyond the dialog. Required in either Multicall or Call or both.
Element:	Authentication
Parents:	Multicall | Call
Children:	Authentication_code_description | Authentication_code | Expected_caller
Description:	A container. Contains tags that specify the information necessary for ensuring that the caller is authorized to use the service. Authentication is indicated if there is an Authentication_code passed in from the customer's application. If there is an authentication_code, there must also be a description of that code. Optional.
Element:	Content
Parents:	Multicall | Call
Description:	Audio. The content message to be played to the caller. The content may be an audio file (*.wav), a text file (*.txt), or raw text (enclosed in double quotes). Optional.
Element:	Value_entry
Parents:	Multicall | Call
Attributes:	mindigits | maxdigits
Description:	Audio. A description of the entry to be entered by the called party. Must fit carrier phrase, "Please enter..." and "You will be asked for..." Either Choices or Value_entry, but not both, may be specified. Optional.
Element:	Choices
Parents:	Multicall | Call
Children:	Choice | Transfer
Description:	A container. Contains information about the list of choices that will be presented to the caller during the call. Optional.
Element:	Phone_number
Parents:	Call_info
Description:	Phone number from which Expected_caller is expected to call. Required.

FIG. 9B

Element:	Expected_caller
Parents:	Authentication
Description:	Audio. The name of the person expected to be calling from a given phone number. Optional.

Element:	Response_url
Parents:	Call_info
Description:	URL that Incall Service is to use to return status information about the call to the customer application. Optional.
Element:	Authentication_code_description
Parents:	Authentication
Description:	Audio. Description of the authentication code the caller will be asked to enter. Fits the carrier phrase, "Please enter <authentication_code_description>." For example, "Please enter your account number." Required for each Authentication tag.
Element:	Authentication_code
Parents:	Authentication
Description:	The digit string value of the caller's authentication_code_description. That is, the Authentication_code is the value that the caller must enter in order to continue with the call. Required for each Authentication tag.
Element:	Choice
Parents:	Choices
Children:	Choice_description | Choice_value
Description:	A container. Describes the choices that are available to the caller. There is usually more than
	one Choice tag per Choices tag. Optional.
Element:	Transfer
Parents:	Choices
Children:	Transfer_description | Transfer_number
Description:	A container. Describes the transfer option available to the caller. If there is a transfer option, the value that the caller presses is "0" in order to transfer. Only one Transfer tag is allowed per Choices tag. Optional.
Element:	Choice_description
Parents:	Choice
Description:	Audio. Describes the option the caller may choose. Fits the carrier phrase, "If you would like <choice_description>, press one." Required for each Choice tag.

FIG. 9C

Element:	Choice_value
Parents:	Choice
Description:	A single digit number that indicate the touch-tone that the caller should press in order to select the associated choice. Note that if there is a Transfer tag, "0" cannot be used for a Choice_value. Required for each Choice tag.
Element:	Transfer_description
Parents:	Transfer
Description:	Audio. Describes the person or thing (e.g., IVR) the caller would be transferred to should they press zero. Required for each Transfer tag.
Element:	Transfer_number
Parents:	Transfer
Description:	The phone number to which the caller would be transferred, if they press zero. Required for each Transfer tag.

FIG. 9D

FIG. 10A

1. Incall_Mfile_SC1_1.xml

```
<?xml version='1.0'?>
<Incall Service title="Joe's Sales M file">

<Service name="movie sales">
  <DNIS>5122900001</DNIS>
  <Service_description>"Joe's Movie Sales"</Service_description>

  <Multicall>
    <Authentication>
      <Authentication_code_description>"movie pin"</Authentication_code_description>
  </Authentication>

  <Choices>
    <Choice>
      <Choice_description>C:\Mob\purchase_DVD.wav</Choice_description>
      <Choice_value>1</Choice_value>
    </Choice>
    <Choice>
      <Choice_description>c:\Mob\purchase_movie_video.wav</Choice_description>
      <Choice_value>2</Cjoice_value>
  </Choice>

  <Choice>
    <Choice_description>C:\Mob\purchase_soundtrack.wav</Choice_description>
    <Choice_value>3</Choice_value>
  </Choice>

  <Transfer>
    <Transfer_description>"Kathy's phone"</Transfer_description>
    <Transfer_number>460</Transfer_number>
  </Transer>

  </Choices>
 </Multicall>
</Service>

<Service name="theater sales">
  <DNIS>5122900003</DNIS>
  <Service_description>"Joe's Stage Productions Stuff Sales"</Service_description>

  <Multicall>
```

CONTINUED FROM FIG. 10A

```
<Authentication>
  <Authentication_code_description>"theater pin"</Authentication_code_description>
</Authentication>

<Choices>
  <Choice>
    <Choice_description>C:\Mob\purchase_theater_video.wav</Choice_description>
    <Choice_value>1</Choice_value>
  </Choice>

  <Choice>
    <Choice_description>C:\Mob\purchase_playbill.wav</Choice_description>
    <Choice_value>2</Choice_value>
  </Choice>
</Choices>
</Multicall>
</Service>

</Incall Service>
```

FIG. 10B

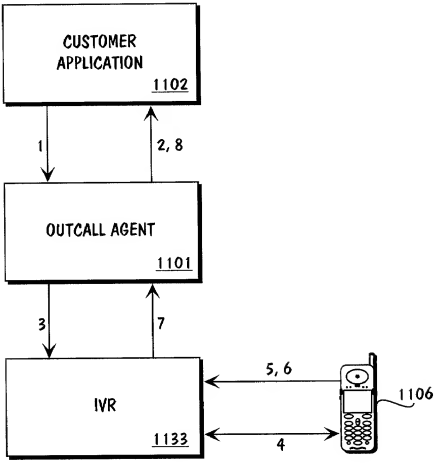

CUSTOMER APPLICATION
1102
1
2, 8
OUTCALL AGENT
1101
3
7
5, 6
IVR
1133
4
1106

FIG. 11A

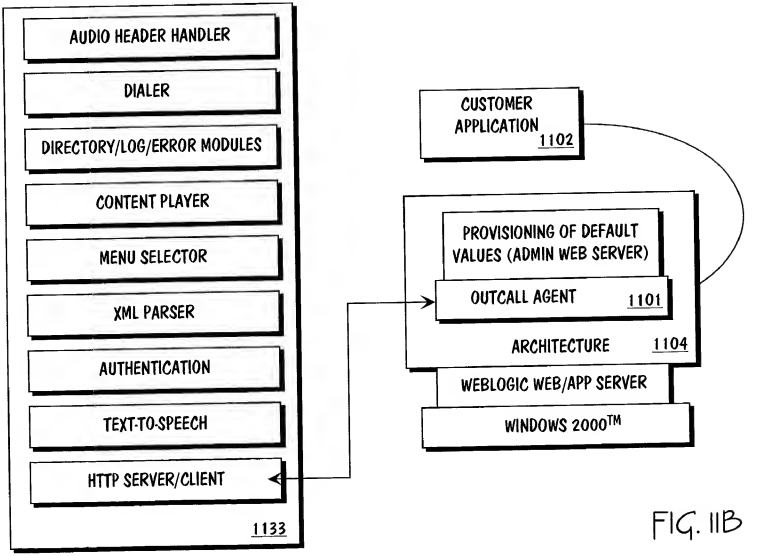

AUDIO HEADER HANDLER
DIALER
DIRECTORY/LOG/ERROR MODULES
CONTENT PLAYER
MENU SELECTOR
XML PARSER
AUTHENTICATION
TEXT-TO-SPEECH
HTTP SERVER/CLIENT
1133
CUSTOMER APPLICATION 1102
PROVISIONING OF DEFAULT VALUES (ADMIN WEB SERVER)
OUTCALL AGENT 1101
ARCHITECTURE 1104
WEBLOGIC WEB/APP SERVER
WINDOWS 2000™

FIG. 11B

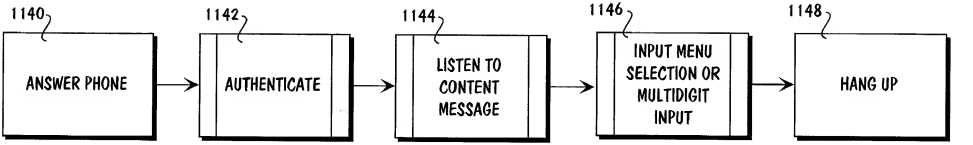

1140
ANSWER PHONE
1142
AUTHENTICATE
1144
LISTEN TO CONTENT MESSAGE
1146
INPUT MENU SELECTION OR MULTIDIGIT INPUT
1148
HANG UP

FIG. 11C

Element:	Outcall Service
Attributes:	title
Children:	Multicall | Percall
Description:	A container. A high level tag to mark the start and end of the XML file. Required.
Element:	Service
Attributes:	name
Parents:	Outcall Service
Children:	Service_description | Multicall | Percall | Reset
Description:	A container. The parameters in this container describe a service. There can be several services set up for Outcall. This tag allows the developer to group Multicall values. Required.
Element:	Multicall
Parents:	Service
Children:	Call_info |Introduction | Authentication | Content | Value_entry | Choices
Description:	A container. Indicates the parameters specified are to be used as default values for all the calls. Parameters set here act as default values for all calls until another multicall file is specified. Optional.
Element:	Percall
Parents:	Service
Children:	Call
Description:	A container. Contains the list of calls to be made, one call per Call tag. Required if no Multicall tag specified.
Element:	Reset
Parents:	Service | Call
Description:	Resets values for parent tag and all its children tags already specified. Useful for canceling queued calls before they're made. Optional.
Element:	Call
Attributes:	id
Parents:	Percall
Children:	Call_info | Introduction |Authentication | Content | Value_entry | Choices | Reset
Description:	A container. Contains information for a specific call. Required if there is a Percall tag.
Element:	Call_info
Parents:	Multicall | Call
Children:	Phone_number | Response_url | Ensure_completion
Description:	A container. Contains information about the call, beyond the dialog. Required in either Multicall or Call or both.

FIG. 12A

Element:	Introduction
Parents:	Multicall | Call
Children:	Recipient | Sender
Description:	A container. Contains the information for the introduction portion of the call, the sender and the desired recipient. Required in either Multicall or Call or both.
Element:	Authentication
Parents:	Multicall | Call
Children:	Authentication_code_description | Authentication_code
Description:	A container. Contains tags that specify the information necessary for ensuring that the called party is the intended recipient of the call. Optional. Authentication is indicated if there is an authentication_code passed in from the customer's application. If there is an authentication_code, there must also be a description of that code and a recipient.
Element:	Content
Parents:	Multicall | Call
Description:	Audio. The content message to be played to the called party. The content may be an audio file (*.wav), a text file (*.txt), or raw text (enclosed in double quotes). Optional.
Element:	Value_entry
Parents:	Multicall | Call
Attributes:	mindigits | maxdigits
Description:	Audio. A description of the entry to be entered by the called party. Must fit carrier phrase, "Please enter..." and "You will be asked for..." Either Choices or Value_entry. but not both, may be specified.
Element:	Choices
Parents:	Multicall | Call
Children:	Choice | Transfer
Description:	A container. Contains information about the list of choices that will be presented to the user during the call. Either Choices or Value_entry, but not both, may be specified. Optional.
Element:	phone_number
Parents:	Call_info
Description:	Phone number to be called. Must include every digit that is to be dialed. (e.g., 9 to get an outside line, 1 for long distance). Required.
Element:	Response_url
Parents:	Call_info
Description:	URL that Outcall service is to use to return status information about the call to the customer application. Optional.

FIG. 12B

Element:	Ensure_completion
Parents:	Call_info
Description:	The number of times that Outcall service will call a person back, if the person has authenticated. These callbacks increase the likelihood of the completion of a desired call that was dropped accidentally (for instance, by the network). Optional. Default is 0.
Element:	Recipient
Parents:	Introduction
Description:	Audio. Usually text to be converted to speech. Fits the carrier phrase, "This is an automated call for <Recipient> from <Sender>." If Recipient is omitted from the XML, no authentication is done; rather, the called party is asked to press 1 to continue. Optional.
Element:	Sender
Parents:	Introduction
Description:	Audio. Fits the carrier phrase, "This is an automated call from <Sender>." Required.
Element:	Authentication_code_description
Parents:	Authentication
Description:	Audio. Description of the authentication code the party called will be asked to enter. Fits the carrier phrase, "Please enter <authentication_code_description>." For example. "Please enter your account number." Required for each Authentication tag.
Element:	Authentication_code
Parents:	Authentication
Description:	The digit string value of the called party's authentication_code description. That is, the
	Authentication_code is the value that the called party must enter in order to continue with the
	call. Required for each Authentication tag.
Element:	Choice
Parents:	Choices
Children:	Choice_description | Choice_value
Description:	A container. Describes the choices that are available to the called party. There is usually more than one Choice tag per Choices tag. Optional.
Element:	Transfer
Parents:	Choices
Children:	Transfer_description | Transfer_number
Description:	A container. Describes the transfer option to the called party. If there is a transfer option, the value that the called party presses is "0" in order to transfer. Only one Transfer tag is allowed per Choices tag. Optional.

FIG. 12C

Element:	Choice_description
Parents:	Choice
Description:	Audio. Describes the option the called party may choose. Fits the carrier phrase, "If you would like <choice_description>, press 1." Required for each Choice tag.
Element:	Choice_value
Parents:	Choice
Description:	A single digit number that indicates the touch-tone that the called party should press in order to select the associated choice. Not that if there is a Transfer tag, "0" cannot be used for a Choice_value. Required for each Choice tag.
Element:	Transfer_description
Parents:	Transfer
Description:	Audio. Describes the person or thing the called party would be transferred to should they press zero. Required for each Transfer tag.
Element:	Transfer_number
Parents:	Transfer
Description:	The phone number to which the called party would be transferred, if they press zero. Required for each Transfer tag,

FIG. 12D

1. Multi-call content definition file: OM1_short.xml
This XML file defines a hypothetical outcall use case where ever called party will be presented with a short audio review of a movie. Then, users will be presented with a menu of two choices (purchase the DVD or purchase the video) or transferring to a call center.

```
<?xml version='1.0'?>
<Outcall service title="Outcall Test M file">
<Multicall>
    <Call_info>
        <Response_url>http://vpl>
mars/servlet/Outcall_serviceResponse</Response_url>
    </Call_info>
    <Content>C:\SmartOutcall\Sounds\princess_bride_x2.wav</Content>
    <Choices>
        <Choice>
            <Choice_description>
                C:\SmartOutcall\Sounds\purchase_DVD.wav
            </Choice_description>
        <Choice_value>1</Choice_value>
    </Choice>
    <Choice>
            <Choice_description>
                C:\SmartOutcall\Sounds\purchase_movie_video.wav
            </Choice_description>
        </Choice>
        <Transfer>
            <Transfer_description>"Kathy's phone"</Transfer_description>
            <Transfer_number>4939880</Transfer_number>
        </Transfer>
      </Choices>
</Multicall>
</Outcall service>
```

FIG. 13A

2. Per-call IVR definition file: OP1_short.xml

This XML file defines an outcall request using the current content definition (see the previous XML file) by specifying a 10-digit phone number to be called (9252517200) and the 4-digit passcode (4321) to determine if the person who answers the call is really "John Smith" as authorized to hear subsequent audio content.

```
<?xml version='1.0'?>
<Outcall service title="Outcall Test P file">
<Percall>
        <Call id="12345">
                <Call_info>
                    <Phone_number>95252517200</Phone_number>
                </Call_info>
                <Authentication>
                    <Authentication_code_description>
                        "your authentication code"
                    </Authentication_code_description>
                    <Authentication_code>4321</Authentication_code>
                </Authentication>
                <Introduction>
                    <Sender> "Test system"</Sender>
                    <Recipient> "John Smith" </Recipient>
                </Introduction>
        </Call>
</Percall>
</Outcall service>
```

GENERIC DIALOG SAMPLE

User:	Hello
System:	Hello. This is an automated call for <Recipient> from <Sender>. If you are <Recipient>, please enter <Authentication_code_description> followed by the pound key.
User:	Enters <Authentication_code>
System:	I heard digits_entered If this is correct, press one.
User:	Presses 1
System:	Thank you. A message from <Sender> is next. Some important options follow the message. The message is less than one minute long. Beginning of message. <Content> End of message. That was your message. To hear the message again, press the star key. Please choose from one of the following #_choices choices. If you would like<Choice_description(1)>, press <Choice_value(1). If you would like <Choice_description(2), press <Choice_value(2)... If you would like to be transferred to <Transfer_description>, press 0.
User:	Enters 2
System:	To confirm that you would like <Choice_description(2)>, press one.
User:	Enters 1
System:	Your choices of <Choice_description(2)> has been confirmed. Thank you. Good-bye.

FIG. 13B

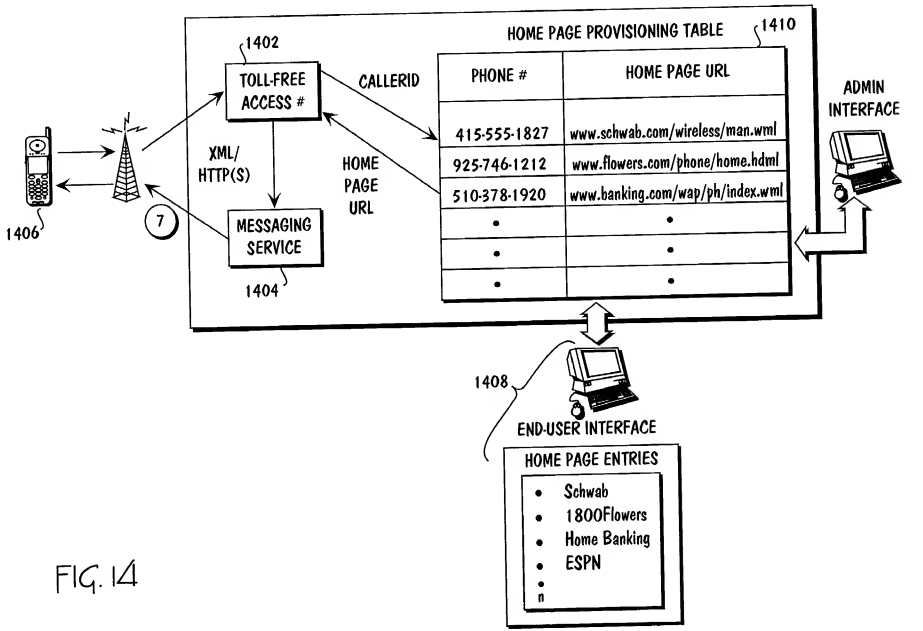

HOME PAGE PROVISIONING TABLE
1410
1402
TOLL-FREE ACCESS #
CALLERID
PHONE #
HOME PAGE URL
415-555-1827
www.schwab.com/wireless/man.wml
925-746-1212
www.flowers.com/phone/home.hdml
510-378-1920
www.banking.com/wap/ph/index.wml
ADMIN INTERFACE
XML/ HTTP(S)
HOME PAGE URL
7
MESSAGING SERVICE
1404
1406
1408
END-USER INTERFACE
HOME PAGE ENTRIES
Schwab
1800Flowers
Home Banking
ESPN
n

FIG. 14

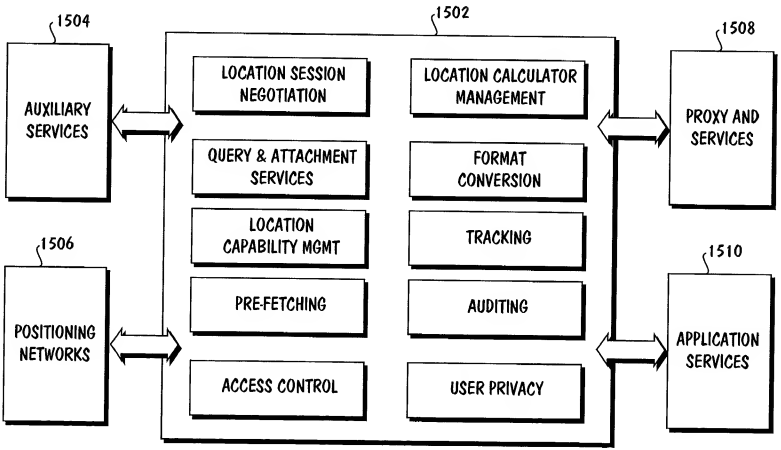
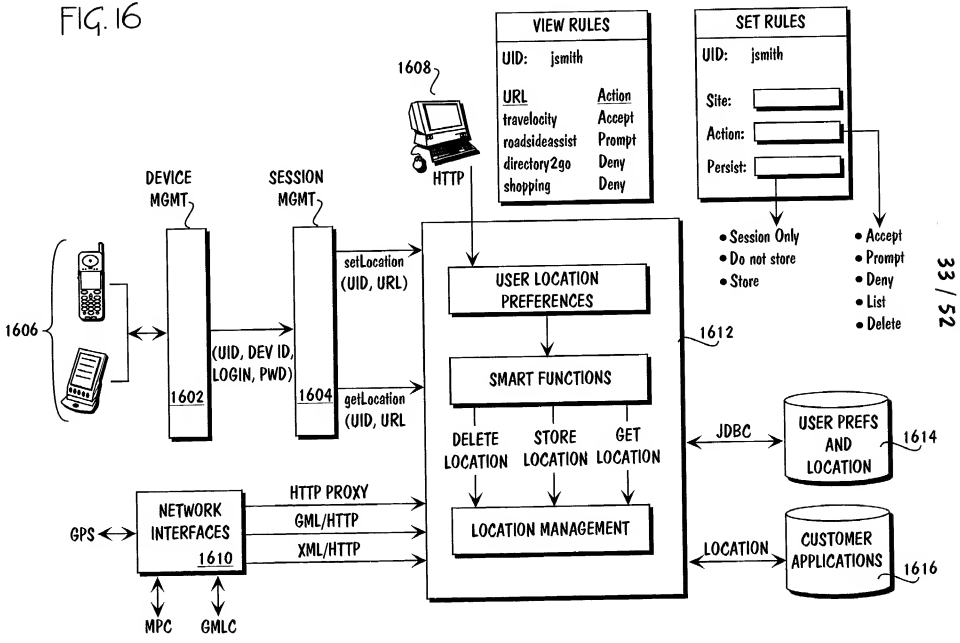

1504
AUXILIARY SERVICES
1506
POSITIONING NETWORKS
1502
LOCATION SESSION NEGOTIATION
LOCATION CALCULATOR MANAGEMENT
QUERY & ATTACHMENT SERVICES
FORMAT CONVERSION
LOCATION CAPABILITY MGMT
TRACKING
PRE-FETCHING
AUDITING
ACCESS CONTROL
USER PRIVACY
1508
PROXY AND SERVICES
1510
APPLICATION SERVICES

FIG. 15

FIG. 16


VIEW RULES
UID: jsmith
URL Action
travelocity Accept
roadsideassist Prompt
directory2go Deny
shopping Deny
SET RULES
UID: jsmith
Site:
Action:
Persist:
1608
HTTP
DEVICE MGMT
SESSION MGMT
1606
1602
1604
(UID, DEV ID, LOGIN, PWD)
setLocation (UID, URL)
getLocation (UID, URL)
USER LOCATION PREFERENCES
SMART FUNCTIONS
DELETE LOCATION
STORE LOCATION
GET LOCATION
1612
• Session Only
• Do not store
• Store
• Accept
• Prompt
• Deny
• List
• Delete
JDBC
USER PREFS AND LOCATION
1614
LOCATION
CUSTOMER APPLICATIONS
1616
LOCATION MANAGEMENT
HTTP PROXY
GML/HTTP
XML/HTTP
NETWORK INTERFACES
1610
GPS
MPC
GMLC

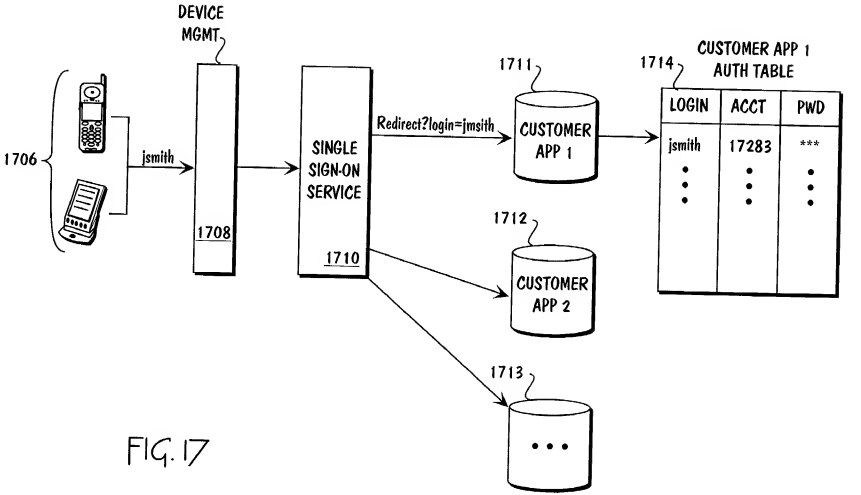

DEVICE MGMT
1706
jsmith
1708
SINGLE SIGN-ON SERVICE
1710
Redirect?login=jmsith
1711
CUSTOMER APP 1
1712
CUSTOMER APP 2
1713
1714
CUSTOMER APP 1 AUTH TABLE
LOGIN
ACCT
PWD
jsmith
17283
***

FIG. 17

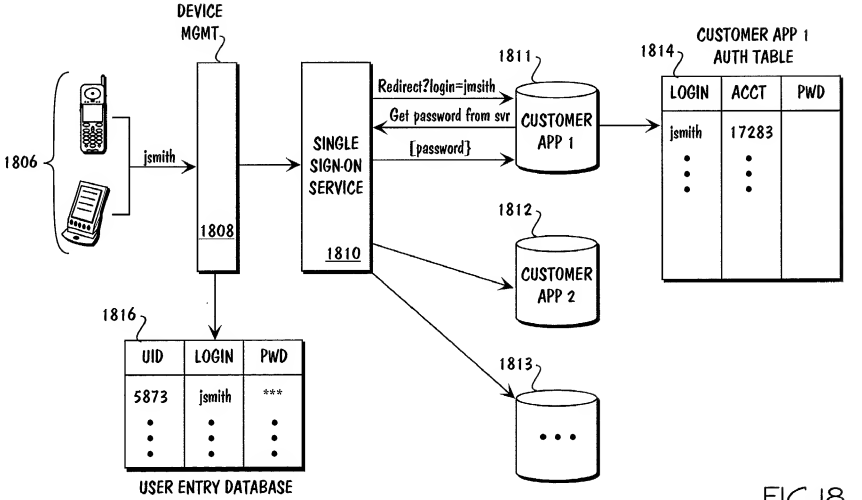

DEVICE MGMT
1806
jsmith
1808
SINGLE SIGN-ON SERVICE
1810
Redirect?login=jmsith
Get password from svr
[password]
1811
CUSTOMER APP 1
1814
CUSTOMER APP 1 AUTH TABLE
LOGIN
ACCT
PWD
jsmith
17283
1812
CUSTOMER APP 2
1813
1816
UID
LOGIN
PWD
5873
jsmith
***
USER ENTRY DATABASE

FIG. 18

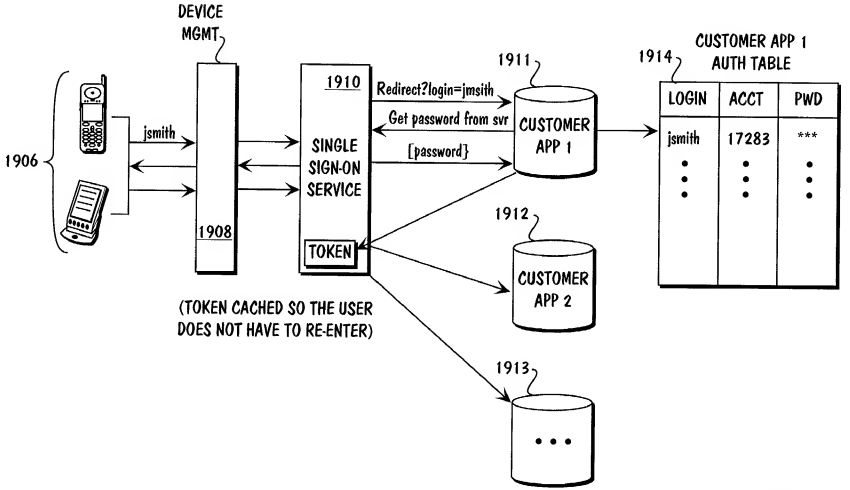
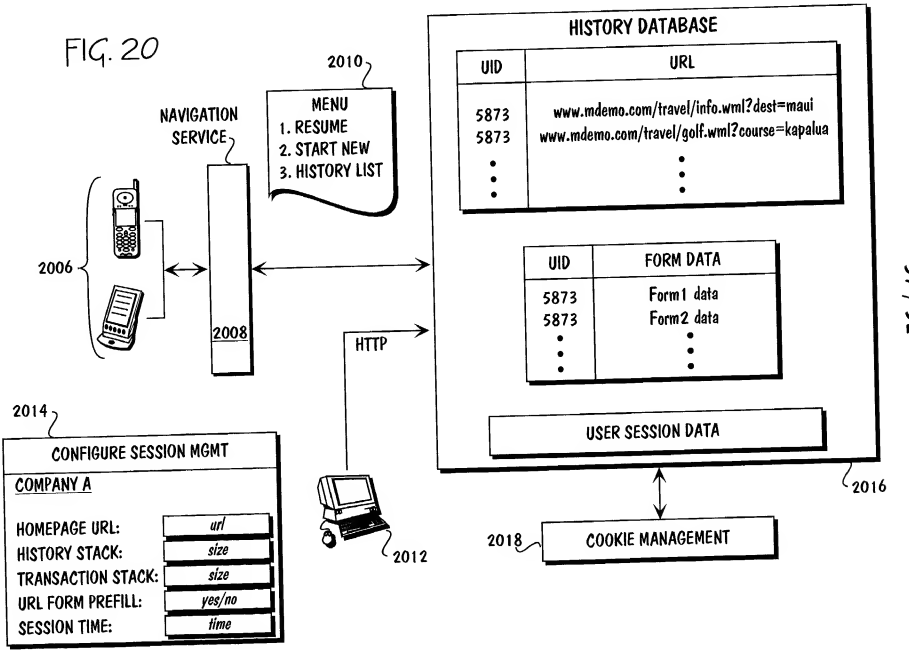

DEVICE
MGMT
1906
jsmith
1908
1910
SINGLE
SIGN-ON
SERVICE
TOKEN
(TOKEN CACHED SO THE USER
DOES NOT HAVE TO RE-ENTER)
Redirect?login=jmsith
Get password from svr
[password]
1911
CUSTOMER
APP 1
1912
CUSTOMER
APP 2
1913
1914
CUSTOMER APP 1
AUTH TABLE
LOGIN
ACCT
PWD
jsmith
17283
***

FIG. 19

FIG. 20


HISTORY DATABASE
UID
URL
5873
www.mdemo.com/travel/info.wml?dest=maui
5873
www.mdemo.com/travel/golf.wml?course=kapalua
UID
FORM DATA
5873
Form1 data
5873
Form2 data
USER SESSION DATA
2016
2010
MENU
1. RESUME
2. START NEW
3. HISTORY LIST
NAVIGATION SERVICE
2008
2006
HTTP
2012
2014
CONFIGURE SESSION MGMT
COMPANY A
HOMEPAGE URL:
url
HISTORY STACK:
size
TRANSACTION STACK:
size
URL FORM PREFILL:
yes/no
SESSION TIME:
time
2018
COOKIE MANAGEMENT

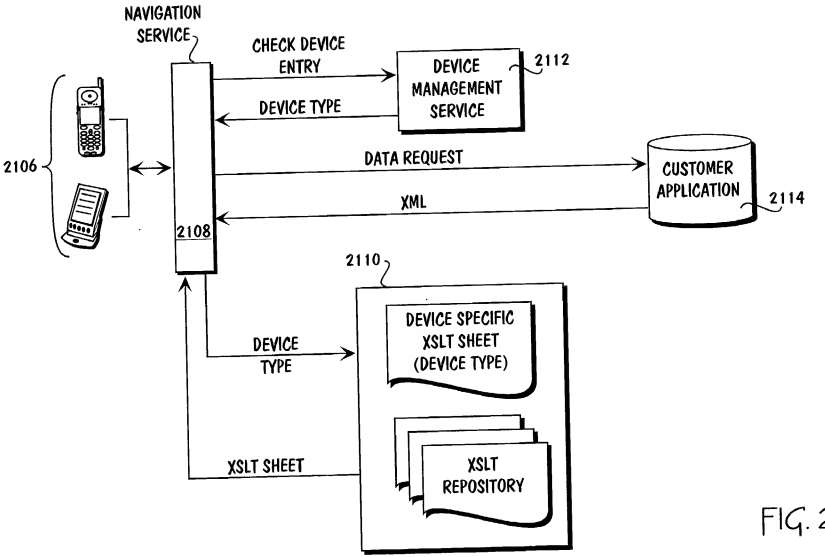
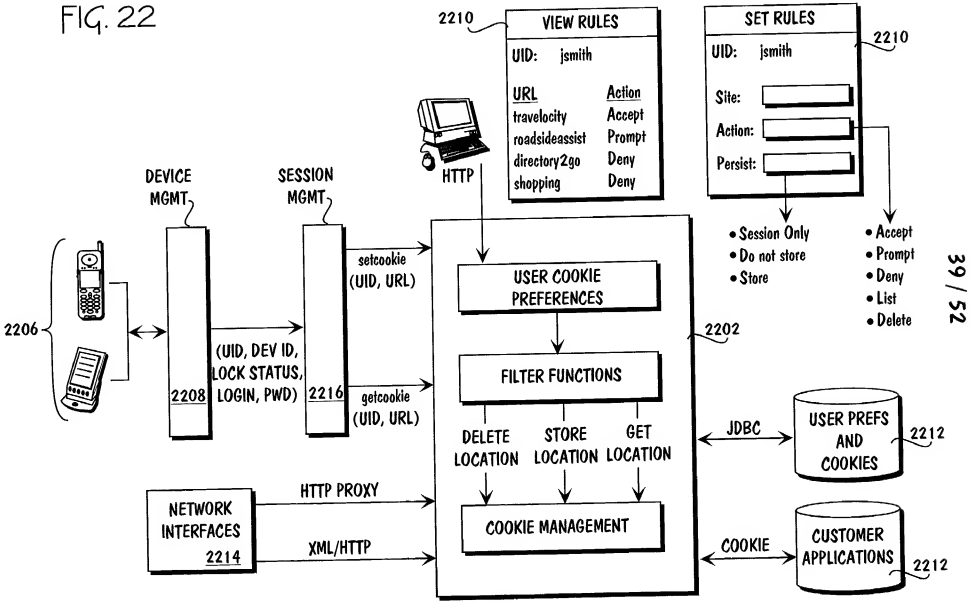

NAVIGATION SERVICE
CHECK DEVICE ENTRY
DEVICE MANAGEMENT SERVICE
2112
DEVICE TYPE
2106
DATA REQUEST
CUSTOMER APPLICATION
2114
XML
2108
2110
DEVICE SPECIFIC XSLT SHEET (DEVICE TYPE)
DEVICE TYPE
XSLT SHEET
XSLT REPOSITORY

FIG. 21

FIG. 22


2210
VIEW RULES
UID: jsmith
URL Action
travelocity Accept
roadsideassist Prompt
directory2go Deny
shopping Deny
SET RULES
UID: jsmith
2210
Site:
Action:
Persist:
• Session Only
• Do not store
• Store
• Accept
• Prompt
• Deny
• List
• Delete
HTTP
DEVICE MGMT
SESSION MGMT
2206
2208
2216
(UID, DEV ID, LOCK STATUS, LOGIN, PWD)
setcookie (UID, URL)
getcookie (UID, URL)
USER COOKIE PREFERENCES
2202
FILTER FUNCTIONS
DELETE LOCATION
STORE LOCATION
GET LOCATION
JDBC
USER PREFS AND COOKIES
2212
NETWORK INTERFACES
2214
HTTP PROXY
XML/HTTP
COOKIE MANAGEMENT
COOKIE
CUSTOMER APPLICATIONS
2212

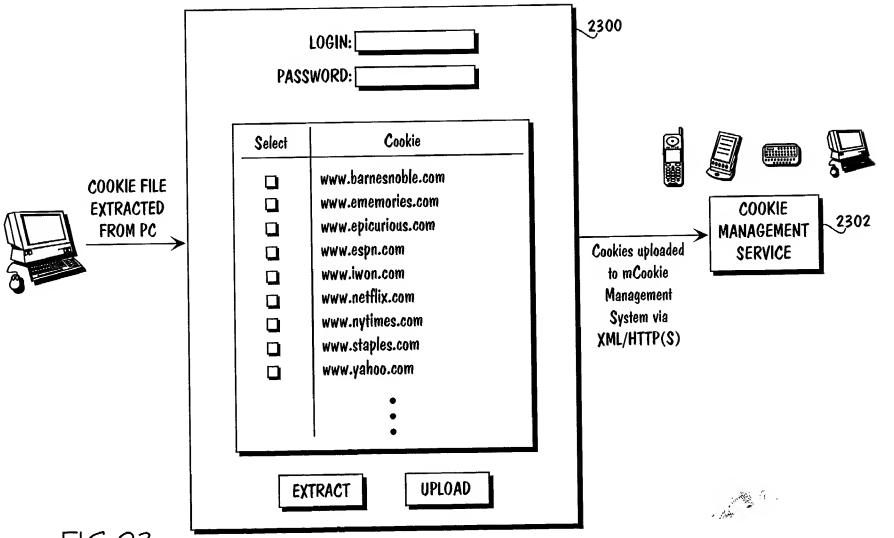

LOGIN:
PASSWORD:
2300
Select
Cookie
www.barnesnoble.com
www.ememories.com
www.epicurious.com
www.espn.com
www.iwon.com
www.netflix.com
www.nytimes.com
www.staples.com
www.yahoo.com
EXTRACT
UPLOAD
COOKIE FILE EXTRACTED FROM PC
Cookies uploaded to mCookie Management System via XML/HTTP(S)
COOKIE MANAGEMENT SERVICE
2302

FIG. 23

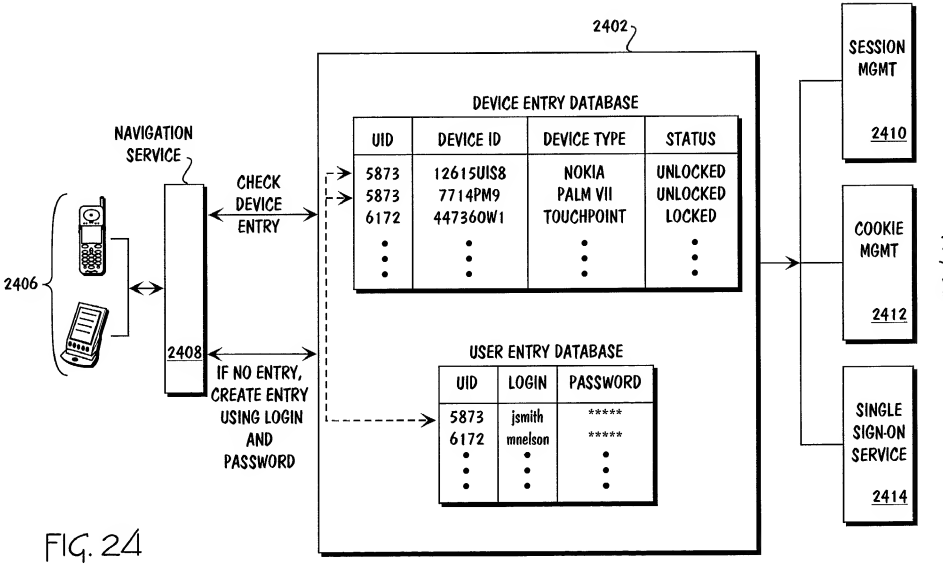

2402
SESSION MGMT
2410
COOKIE MGMT
2412
SINGLE SIGN-ON SERVICE
2414
DEVICE ENTRY DATABASE
UID
DEVICE ID
DEVICE TYPE
STATUS
5873
5873
6172
12615UIS8
7714PM9
447360W1
NOKIA
PALM VII
TOUCHPOINT
UNLOCKED
UNLOCKED
LOCKED
NAVIGATION SERVICE
CHECK DEVICE ENTRY
2406
2408
IF NO ENTRY, CREATE ENTRY USING LOGIN AND PASSWORD
USER ENTRY DATABASE
UID
LOGIN
PASSWORD
5873
6172
jsmith
mnelson
*****
*****

FIG. 24

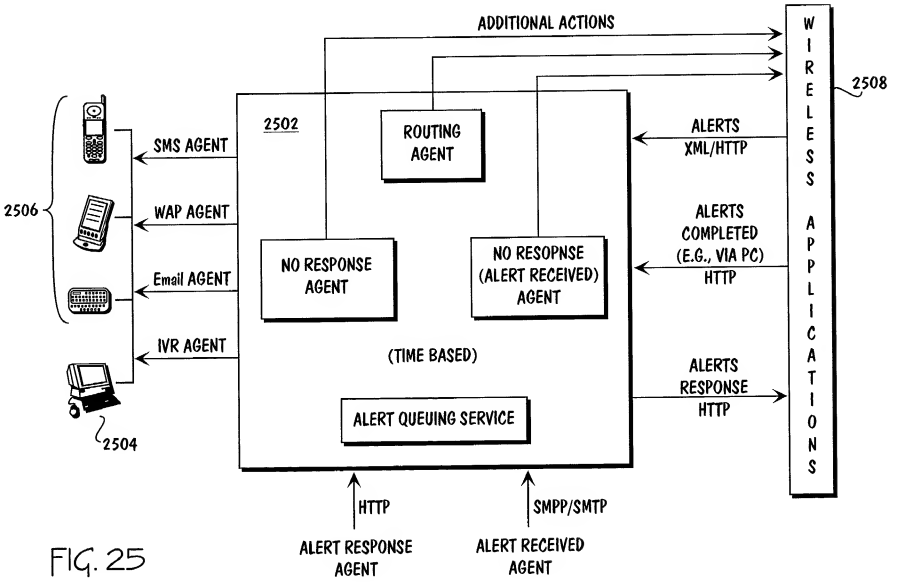
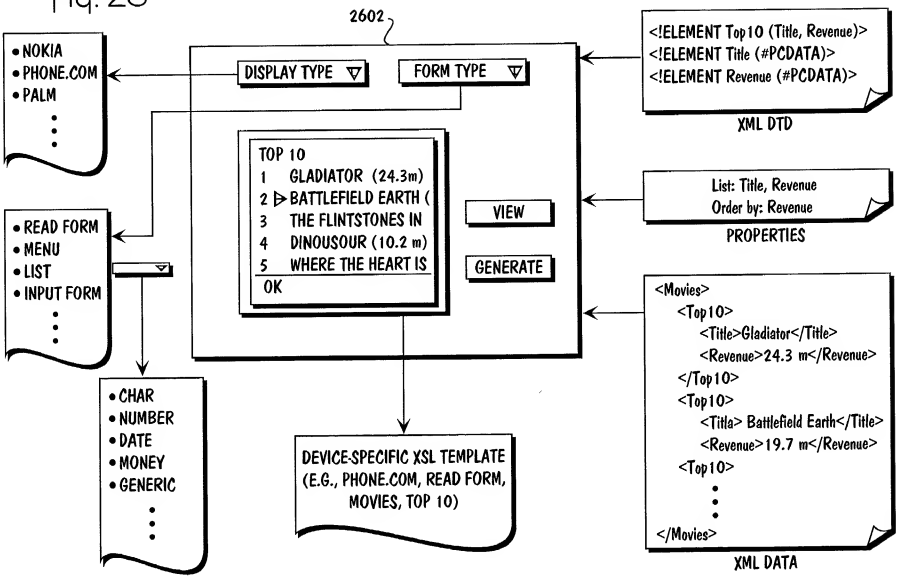

ADDITIONAL ACTIONS
WIRELESS APPLICATIONS
2508
2502
ROUTING AGENT
ALERTS XML/HTTP
SMS AGENT
WAP AGENT
Email AGENT
IVR AGENT
2506
2504
NO RESPONSE AGENT
NO RESOPNSE (ALERT RECEIVED) AGENT
ALERTS COMPLETED (E.G., VIA PC) HTTP
(TIME BASED)
ALERTS RESPONSE HTTP
ALERT QUEUING SERVICE
HTTP
SMPP/SMTP
ALERT RESPONSE AGENT
ALERT RECEIVED AGENT

FIG. 25

FIG. 26


2602
• NOKIA
• PHONE.COM
• PALM
DISPLAY TYPE
FORM TYPE
<!ELEMENT Top10 (Title, Revenue)>
<!ELEMENT Title (#PCDATA)>
<!ELEMENT Revenue (#PCDATA)>
XML DTD
TOP 10
1 GLADIATOR (24.3m)
2 BATTLEFIELD EARTH (
3 THE FLINTSTONES IN
4 DINOUSOUR (10.2 m)
5 WHERE THE HEART IS
OK
VIEW
GENERATE
List: Title, Revenue
Order by: Revenue
PROPERTIES
• READ FORM
• MENU
• LIST
• INPUT FORM
<Movies>
<Top10>
<Title>Gladiator</Title>
<Revenue>24.3 m</Revenue>
</Top10>
<Top10>
<Titla> Battlefield Earth</Title>
<Revenue>19.7 m</Revenue>
<Top10>
</Movies>
XML DATA
• CHAR
• NUMBER
• DATE
• MONEY
• GENERIC
DEVICE-SPECIFIC XSL TEMPLATE
(E.G., PHONE.COM, READ FORM,
MOVIES, TOP 10)

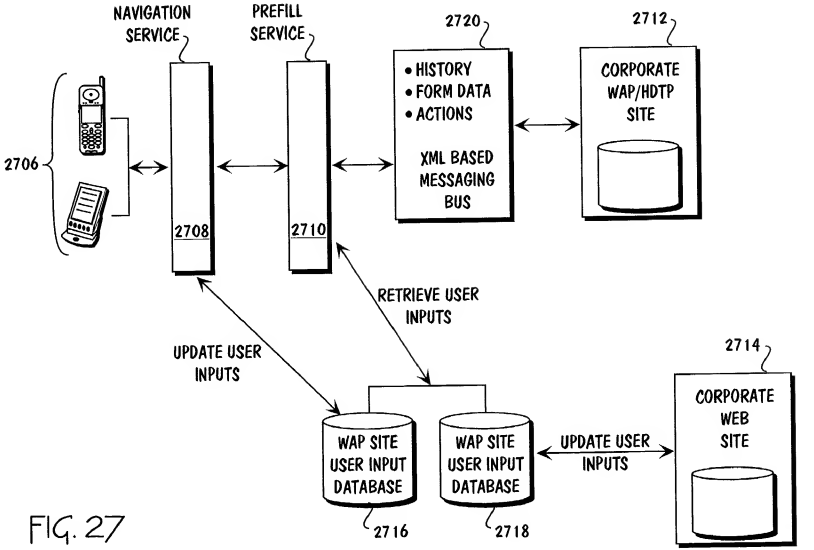

NAVIGATION SERVICE
PREFILL SERVICE
2720
2712
• HISTORY
• FORM DATA
• ACTIONS
XML BASED MESSAGING BUS
CORPORATE WAP/HDTP SITE
2706
2708
2710
RETRIEVE USER INPUTS
UPDATE USER INPUTS
2714
CORPORATE WEB SITE
WAP SITE USER INPUT DATABASE
WAP SITE USER INPUT DATABASE
UPDATE USER INPUTS
2716
2718

FIG. 27

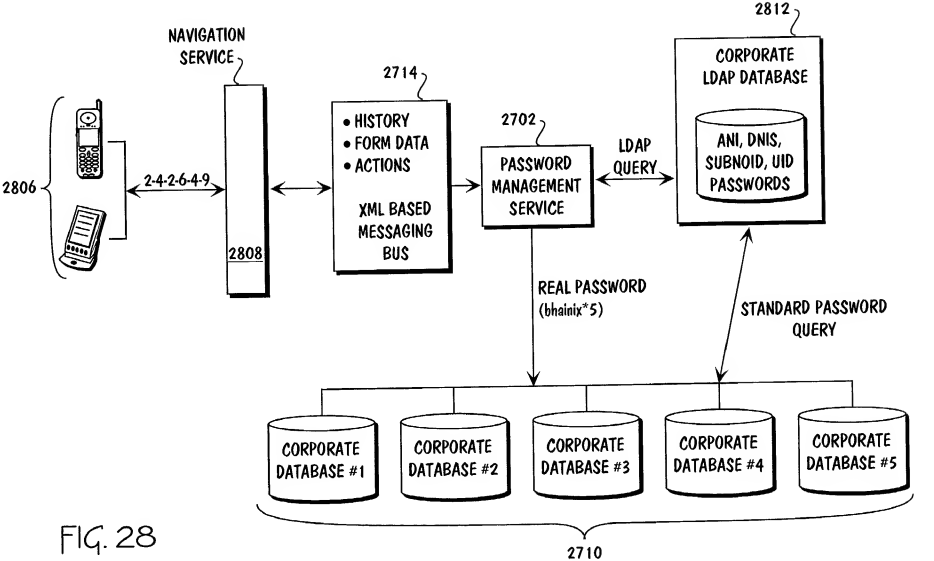
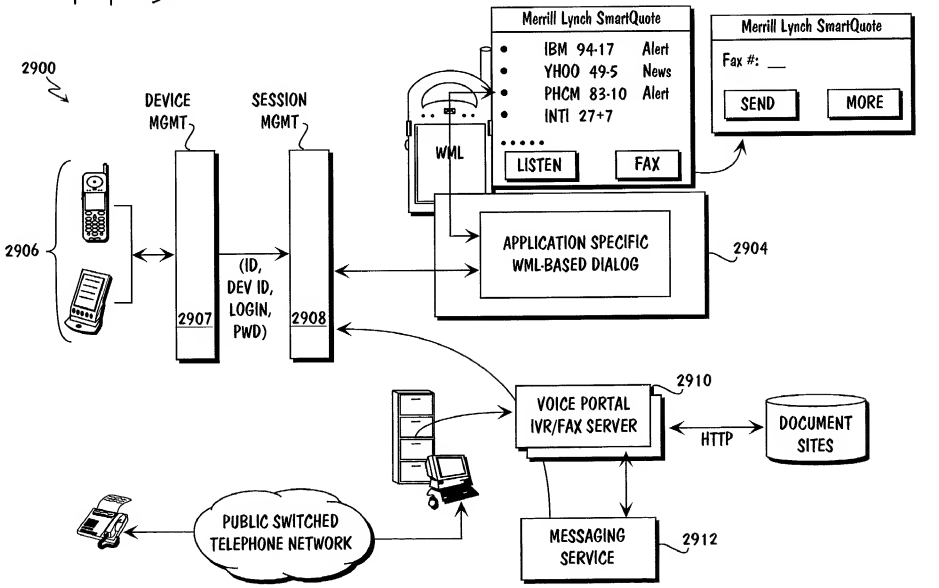

NAVIGATION SERVICE
2714
2812
CORPORATE LDAP DATABASE
• HISTORY
• FORM DATA
• ACTIONS
XML BASED MESSAGING BUS
2702
PASSWORD MANAGEMENT SERVICE
LDAP QUERY
ANI, DNIS, SUBNOID, UID PASSWORDS
2806
2-4-2-6-4-9
2808
REAL PASSWORD (bhainix*5)
STANDARD PASSWORD QUERY
CORPORATE DATABASE #1
CORPORATE DATABASE #2
CORPORATE DATABASE #3
CORPORATE DATABASE #4
CORPORATE DATABASE #5
2710

FIG. 28

FIG. 29A


2900
DEVICE MGMT
SESSION MGMT
2906
2907
(ID, DEV ID, LOGIN, PWD)
2908
Merrill Lynch SmartQuote
IBM 94-17 Alert
YHOO 49-5 News
PHCM 83-10 Alert
INTI 27+7
WML
LISTEN
FAX
Merrill Lynch SmartQuote
Fax #: __
SEND
MORE
APPLICATION SPECIFIC WML-BASED DIALOG
2904
2910
VOICE PORTAL IVR/FAX SERVER
HTTP
DOCUMENT SITES
PUBLIC SWITCHED TELEPHONE NETWORK
MESSAGING SERVICE
2912

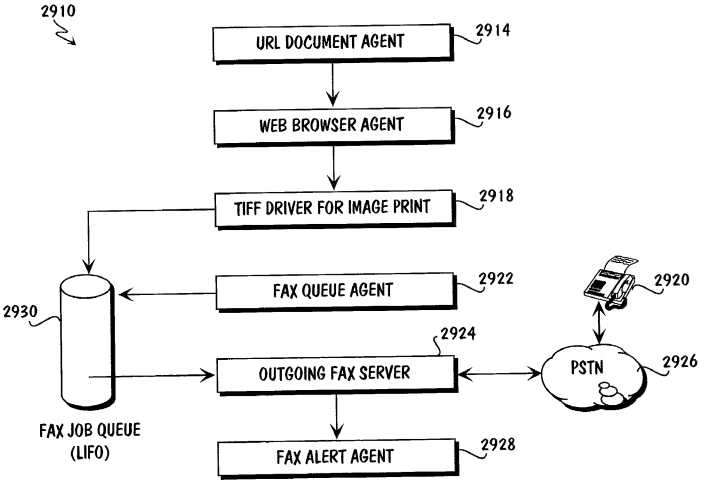

2910
URL DOCUMENT AGENT
2914
WEB BROWSER AGENT
2916
TIFF DRIVER FOR IMAGE PRINT
2918
FAX QUEUE AGENT
2922
2920
2930
2924
OUTGOING FAX SERVER
PSTN
2926
FAX JOB QUEUE
(LIFO)
FAX ALERT AGENT
2928

FIG. 29B

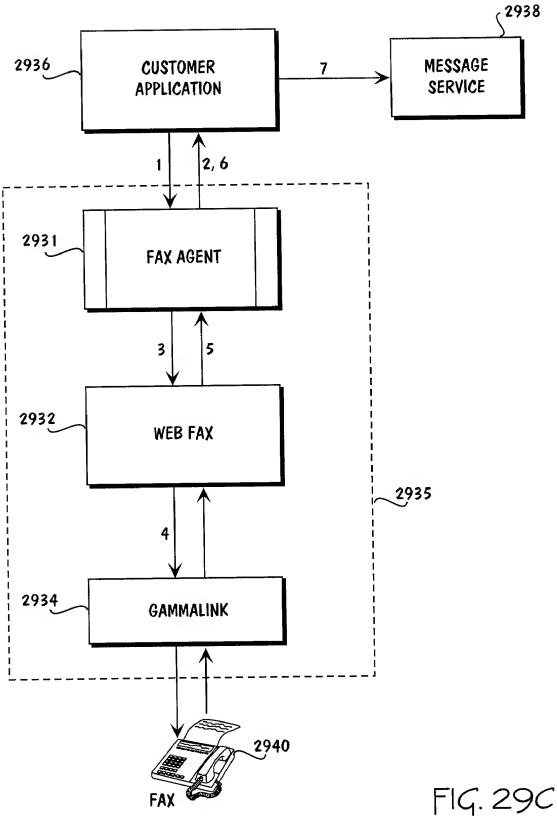

2938
2936
CUSTOMER APPLICATION
7
MESSAGE SERVICE
1
2, 6
2931
FAX AGENT
3
5
2932
WEB FAX
2935
4
2934
GAMMALINK
2940
FAX

FIG. 29C

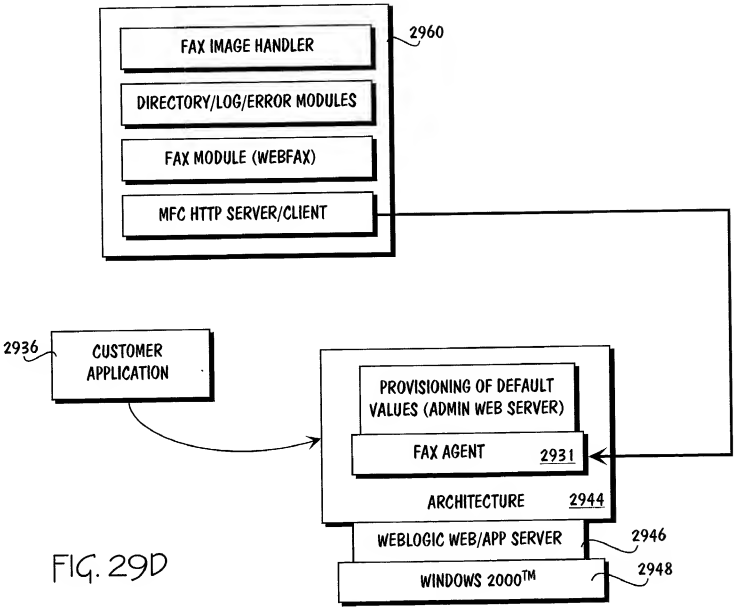

FAX IMAGE HANDLER
2960
DIRECTORY/LOG/ERROR MODULES
FAX MODULE (WEBFAX)
MFC HTTP SERVER/CLIENT
2936
CUSTOMER APPLICATION
PROVISIONING OF DEFAULT VALUES (ADMIN WEB SERVER)
FAX AGENT 2931
ARCHITECTURE 2944
WEBLOGIC WEB/APP SERVER
2946
WINDOWS 2000™
2948

FIG. 29D

FIG. 30

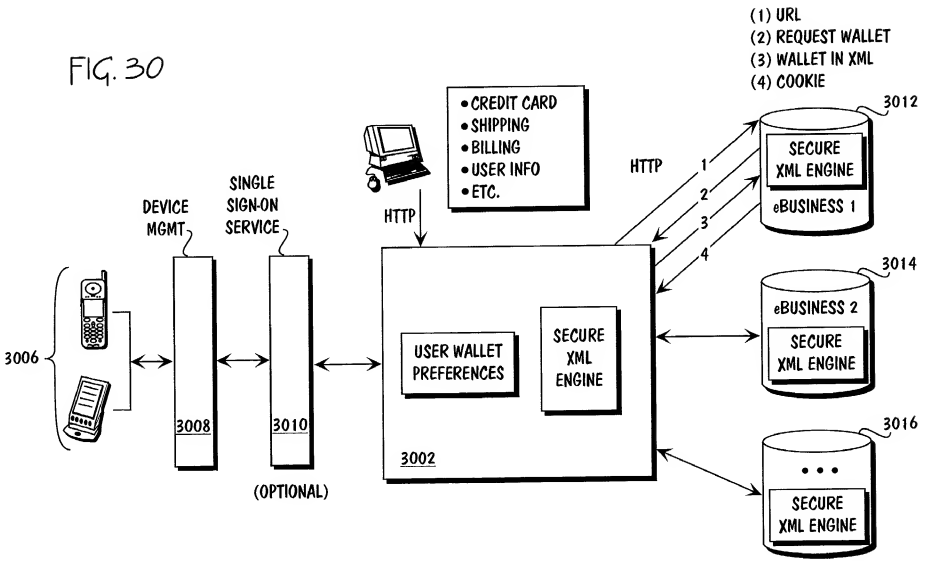
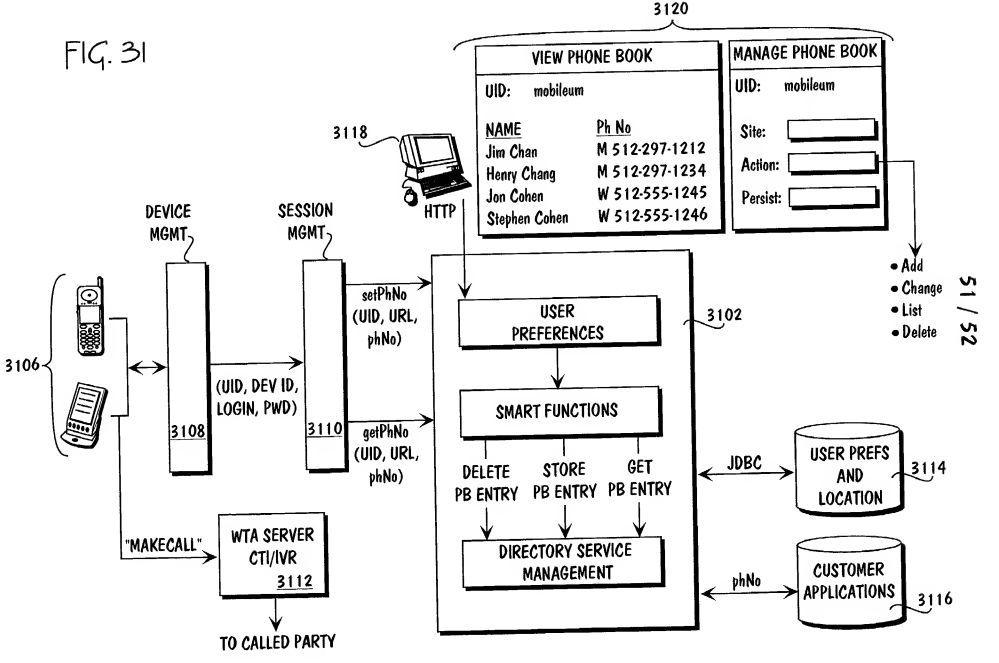

(1) URL
(2) REQUEST WALLET
(3) WALLET IN XML
(4) COOKIE
• CREDIT CARD
• SHIPPING
• BILLING
• USER INFO
• ETC.
HTTP
HTTP
1
2
3
4
3012
SECURE XML ENGINE
eBUSINESS 1
3014
eBUSINESS 2
SECURE XML ENGINE
3016
• • •
SECURE XML ENGINE
DEVICE MGMT
SINGLE SIGN-ON SERVICE
3006
3008
3010
(OPTIONAL)
USER WALLET PREFERENCES
SECURE XML ENGINE
3002

FIG. 31


3120
VIEW PHONE BOOK
UID: mobileum
NAME Ph No
Jim Chan M 512-297-1212
Henry Chang M 512-297-1234
Jon Cohen W 512-555-1245
Stephen Cohen W 512-555-1246
MANAGE PHONE BOOK
UID: mobileum
Site:
Action:
Persist:
• Add
• Change
• List
• Delete
3118
HTTP
DEVICE MGMT
SESSION MGMT
3106
3108
3110
(UID, DEV ID, LOGIN, PWD)
setPhNo (UID, URL, phNo)
getPhNo (UID, URL, phNo)
USER PREFERENCES
3102
SMART FUNCTIONS
DELETE PB ENTRY
STORE PB ENTRY
GET PB ENTRY
DIRECTORY SERVICE MANAGEMENT
JDBC
USER PREFS AND LOCATION
3114
phNo
CUSTOMER APPLICATIONS
3116
"MAKECALL"
WTA SERVER CTI/IVR
3112
TO CALLED PARTY

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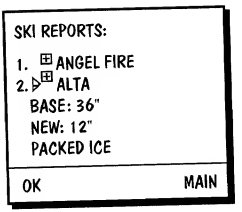

FIG. 32A

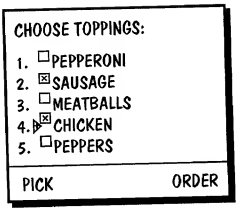

FIG. 32B

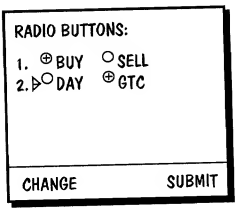

FIG. 32C

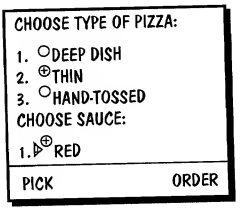

FIG. 32D